NORTHWEST RESEARCH GROUP

FHWA TOP Survey Michigan

March 2005

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Project Overview

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TOP Survey Objectives

- Understand needs and expectations of users of nation's / state's / local region's transportation system
- Measure the extent to which existing transportation system meets those needs
- Update previous measures and provide new baseline measures for emerging issues
- Establish national and other benchmark data for participating states
- Identify priorities for system improvement

Michigan Objectives

- Measure satisfaction with key programs
  - Operations and infrastructure
  - Traffic flow
- Measure perceived benefits of an effective transportation system and the extent to which Michigan's system delivers those benefits
- Identify specific opportunities for service improvements

Research Approach – TOP Survey

- Interviews completed with more than 800 users of the state's transportation system
  - 18 years of age and older
  - Had at least some recent experience traveling on the system defined to include . . .
    - Roads
    - Public transportation
    - Pedestrian walkways / sidewalks
    - Bikeways

Telephone Data Collection

- Continues to be the best sampling and data collection methodology for conducting research that needs to be projected to the general population
- Allows for delivery of long and/or complex surveys, ensuring more valid responses
- Professional interviewers can probe for complete answers to all questions – minimizing non-response

Sampling

- Random digit dial (RDD) sample of Michigan households
  - Ensures inclusion of both listed and unlisted telephone households
  - Cell phone numbers are not included in the sample
- Stratified by two regions
  - Southeast Michigan; Remainder of the state
- Over 800 surveys were completed
  - Margin of error associated with a survey of this size is plus or minus about 3.5 percentage points
  - Within region (n = 400), error is plus or minus 5 percentage points

Weighting

- First stage of weighting adjusts for probability of selection
  - Phone numbers dialed and the universe of phones within the sampling frame
  - Multiple telephone lines in the household
  - Households without telephones
  - Number of adults in the household
- Post-stratification weighting adjusts the sample
  - To match target population estimates in each region
  - To adjust for over / under-sampling among key gender / age groups

Sampling Plan

Region	Definition	Disproportionate Sample Stratification	Proportionate Sample After Weighting
Southeast Michigan	Livingston Macomb Monroe Oakland St. Clair Washtenaw Wayne	393	392
Remainder of State	All Other Counties	414	415
Total		807	807

Questionnaire

- Survey averaged 27 minutes in length
- Core questions asked of all respondents
  - Travel behavior
  - Important system requirements
  - Evaluations of system attributes
  - Overall evaluations and support for system
  - Respondent demographics

Questionnaire – Michigan Custom Questions

- Michigan primarily drew questions from the remainder of the FHWA TOP Survey
  - Operations & infrastructure
    - Pavement conditions
    - Bridge conditions
    - Visual appeal / appearance of roadways / highways
    - Maintenance response times
  - Traffic flow & congestion
    - Congestion
    - Programs / efforts to improve traffic flow
    - Delays from road work
  - Benefits / value of an effective transportation system
  - Opportunities for improvement

Respondent Characteristics

- Matched to census for age and gender through weighting
- Household size = 3.2 persons per household
  - Somewhat higher than census (2.6 persons per household)
- Accessibility
  - 97 percent have a driver's license
  - 99 percent have access to a car
  - Average household has 2.63 vehicles
- Seven out of ten (71%) are commuters
  - Half (50%) work full-time
  - 11% are students and 9% work part-time (can have multiple responses)
- Median household income = $56,655

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Key Findings: Travel

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Modes of Transportation Used

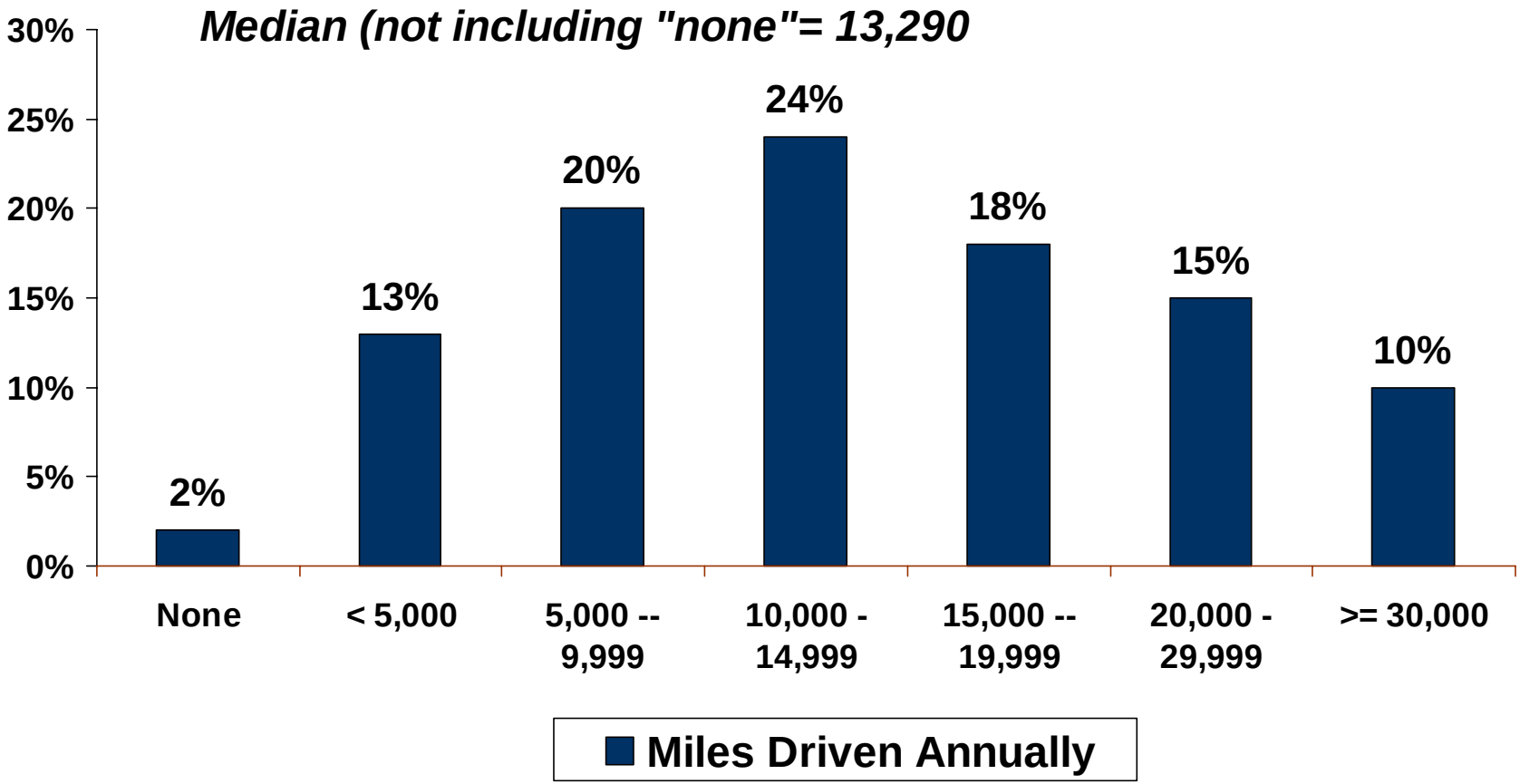
- Nearly all Michigan residents have access to a car which they use on a nearly daily basis.
  - Relatively few (9%) use public transportation.

	% Use Mode	Frequency* of Using Mode
Personal Vehicle	99%	6.3
Walk (Non-recreational)	45	2.8
Bicycle (Recreational and non-recreational)	41	1.3
Public Transportation	9	1.0

** Frequency reported in days per week for those who take trip.*

Miles Driven Annually

- On average, Michigan travelers drive 13,290 miles annually (not including “none”).
  - This equates to more than 94.1 billion miles traveled annually.



Types / Frequency of Regional Travel

- People use their local transportation systems for a variety of purposes, but the most frequent trips are commute trips.
  - Note the high percentage of relatively frequent trips during morning commute hours of those “driving” children to school.

	% Take Trip	Frequency* of Trips Per Week
Commute to Work	68%	4.9
Take Children to School	29	3.7
Commute to School	13	3.3
Business Errands	42	3.0
Shopping / Personal Errands	97	3.0
Recreation / Entertainment	81	1.9
Visiting Friends / Family	80	2.0
Medical / Dental Appointments	26	1.1

** Frequency reported in days per week for those who take trip.*

Satisfaction with Local / Regional Travel

- Travelers are just "somewhat satisfied" with their ability to travel using their region's transportation system.
  - And at least one out of five are dissatisfied.
- Travelers are less satisfied with their commute than non-commute travel.

	Commute Travel	Non-Commute Travel
Very Satisfied	36%	36%
Somewhat Satisfied	35	41
Not Satisfied	26	20
Mean *	3.71	3.82

** Mean based on 5-point scale where "5" means "very satisfied."*

Satisfaction by Region

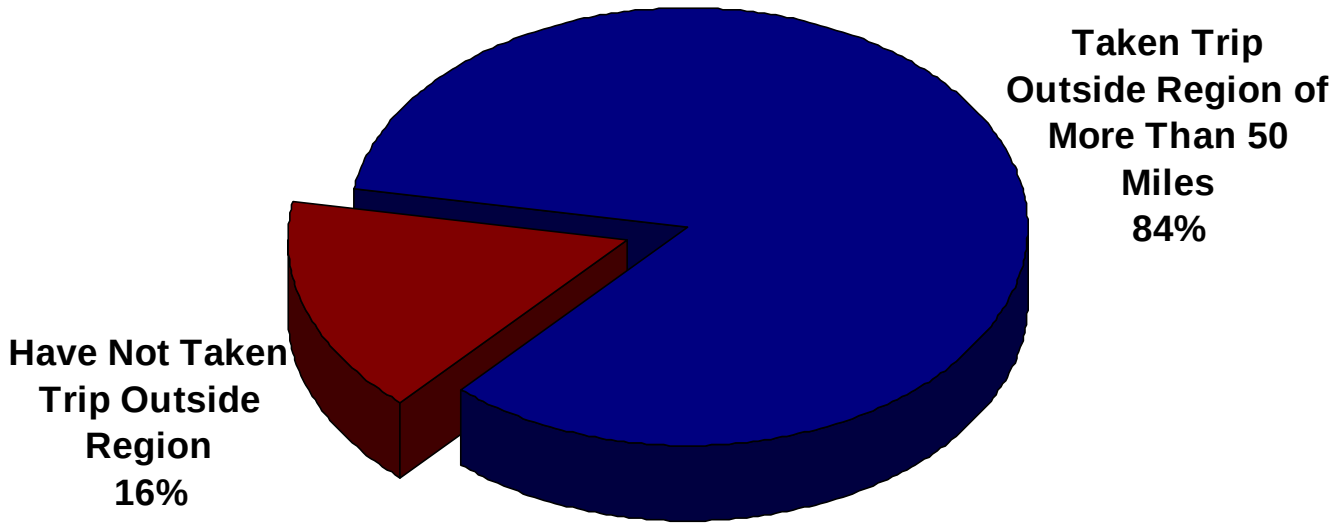
- Residents of Southeast Michigan are less satisfied with both their commute and non-commute travel.

	Southeast Michigan	Remainder of State
	Mean	
Commute Travel	3.52	3.90
Non-Commute Travel	3.49	4.13

** Mean based on 5-point scale where "5" means "very satisfied."*

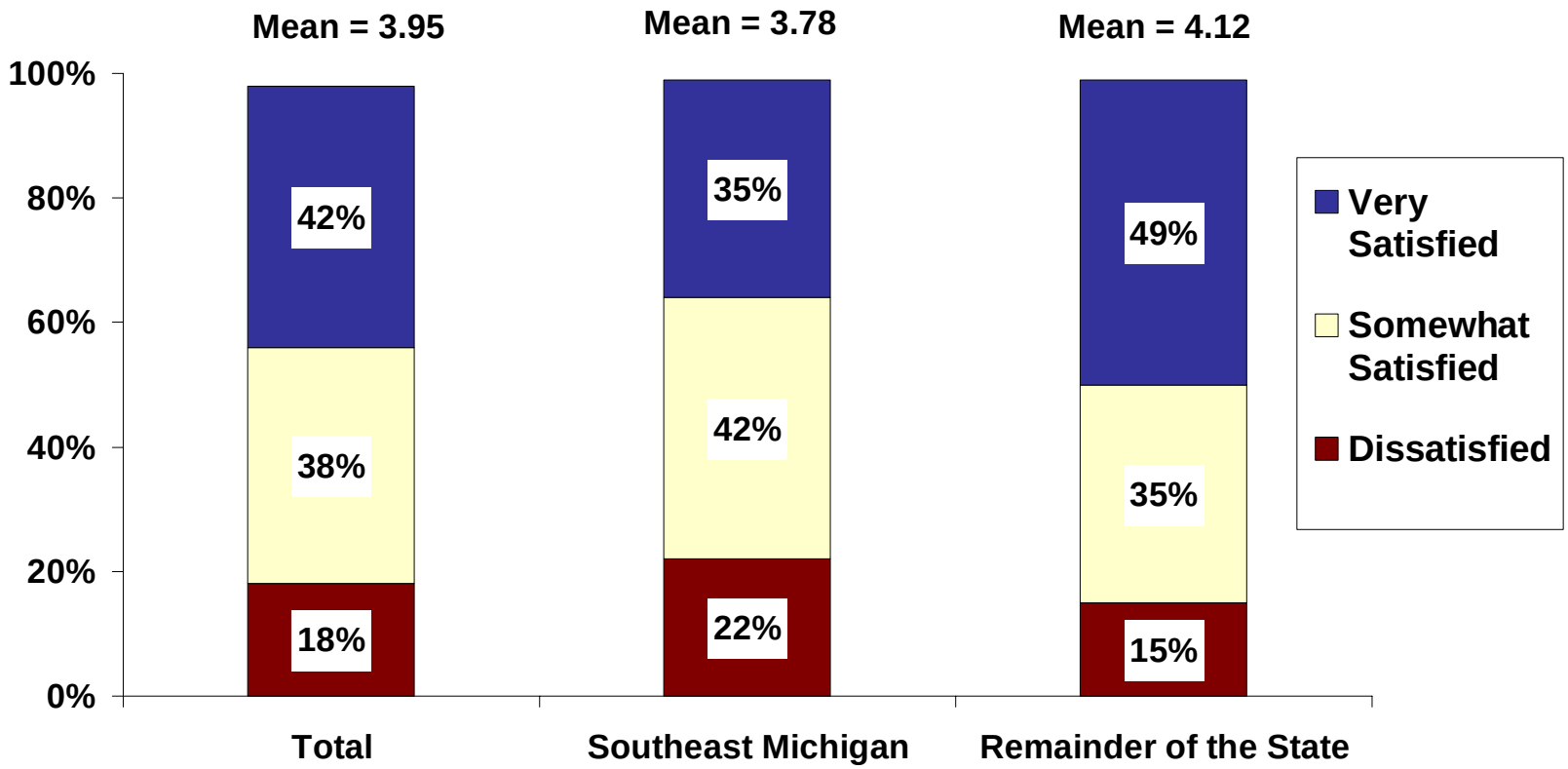
Long Distance / Extended Travel

- More than four out of five (84%) travelers have taken at least one trip outside their local region in the past year.
  - On average, those traveling outside their region average 13 of these trips per year.



Satisfaction with Travel Outside Region

- Ratings for travel outside their local region are somewhat higher, perhaps reflecting the nature of travel.



Neutral responses excluded from graph. Mean based on 5-point scale where "1" means not at all satisfied and "5" means "very satisfied."

Key Findings: System Quality

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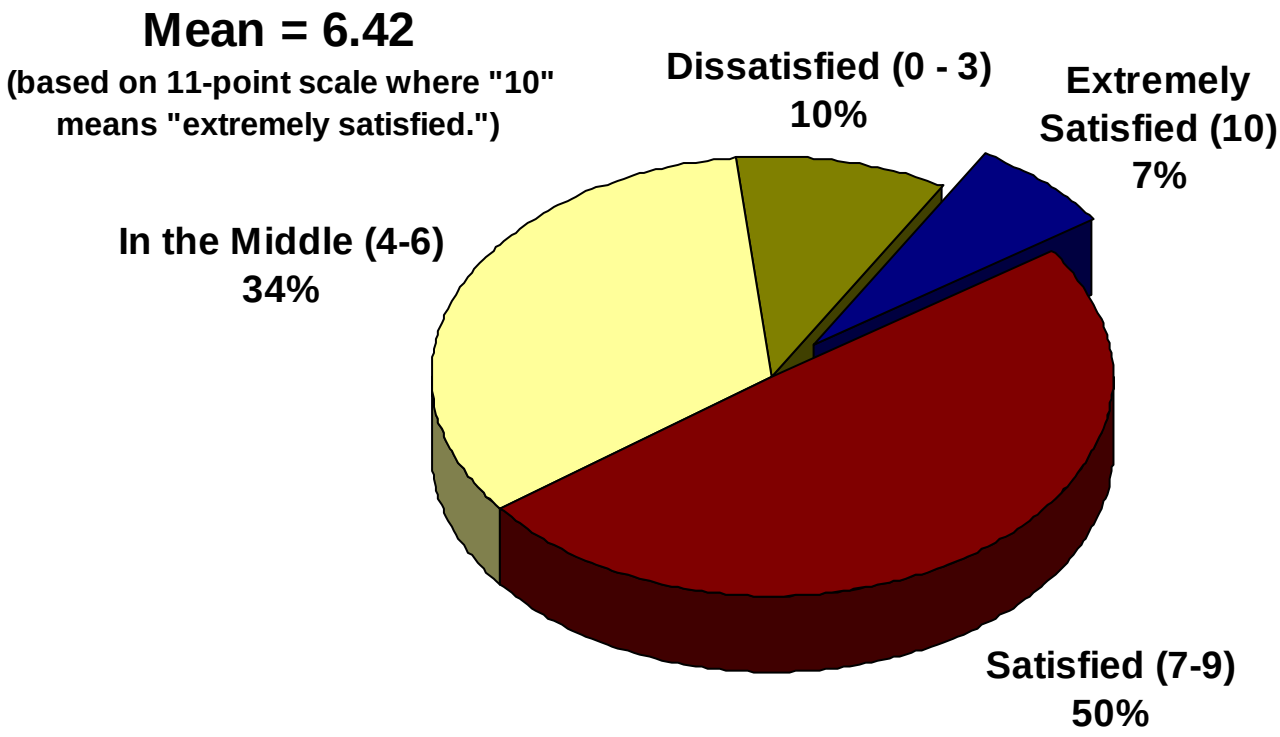
Overall Quality

- Michigan residents are generally neutral to somewhat satisfied with the overall quality of the transportation system in their region.



Important System Characteristics

- By far, highway / roadway safety is the most important system characteristic.

	% Extremely Important	Mean *
Highway / roadway safety	70%	9.29
Ability to get where I want to go quickly / easily	56	8.95
Pavement conditions	56	8.96
Bridge conditions	52	8.65
Efforts to reduce delays from traffic congestion	48	8.62
Management of work zones	44	8.47
Pedestrian safety and mobility	52	8.43
Efforts to improve traffic flow	46	8.43
Planning for future transportation needs	43	8.41
** Mean based on 11-point scale where "10" means "extremely important."*		

Important Characteristics by Region

- Southeast Michigan travelers feel the following are more important:
  - Efforts to reduce delays from road work construction
  - Planning for future transportation needs
  - Efforts to improve traffic flow
  - Traveler information
- Residents of the rest of the state place more emphasis on:
  - Management of work zones
  - Consideration of the environment
  - Visual appeal and amenities
  - Maintenance response times

Quality of System

- Overall, Michigan's transportation system gets a B minus (B-) grade.
  - The system gets the highest grade for its highway / roadway amenities (e.g., rest areas).

	% A	Mean
Overall Grade		2.52
Amenities	21	2.89
Traveler Information	19	2.75
Bridge Conditions	18	2.75
Management of Work Zones	17	2.68
Consideration of the Environment	19	2.67
Visual Appeal	15	2.61
Roadway Safety	12	2.55

Quality of System (con't)

- The system gets its lowest grade for pavement conditions.

	% A	Mean
Overall Grade		2.52
Maintenance Response Times	12	2.49
Pedestrian Safety & Mobility	15	2.46
Efforts to Reduce Congestion / Improve Traffic Flow	11	2.42
Efforts to Reduce Delays from Road Work	9	2.35
Transportation Planning	11	2.30
Bicycle Safety & Mobility	13	2.20
Pavement Conditions	8	2.15

Quality by Region

- Southeast MI rates the state lower for nearly every characteristic. But is clearly differentiated from the remainder of the state by its lower ratings for:
  - Efforts to reduce congestion / improve traffic flow
  - Visual appeal
  - Amenities
  - Management of work zones

	Southeast Michigan	Remainder of State
Overall Grade	2.36 (C+)	2.67 (B-)

Quality by Commuter Status

- Surprisingly non-commuters are more critical of the system than are commuters. They are most different in their concerns regarding:
  - Safety
  - Consideration for the environment
  - Amenities and visual appeal
- Commuters are more critical of the system's
  - Pavement conditions
  - Efforts to reduce delays from roadwork
  - Efforts to reduce congestion and improve traffic flow

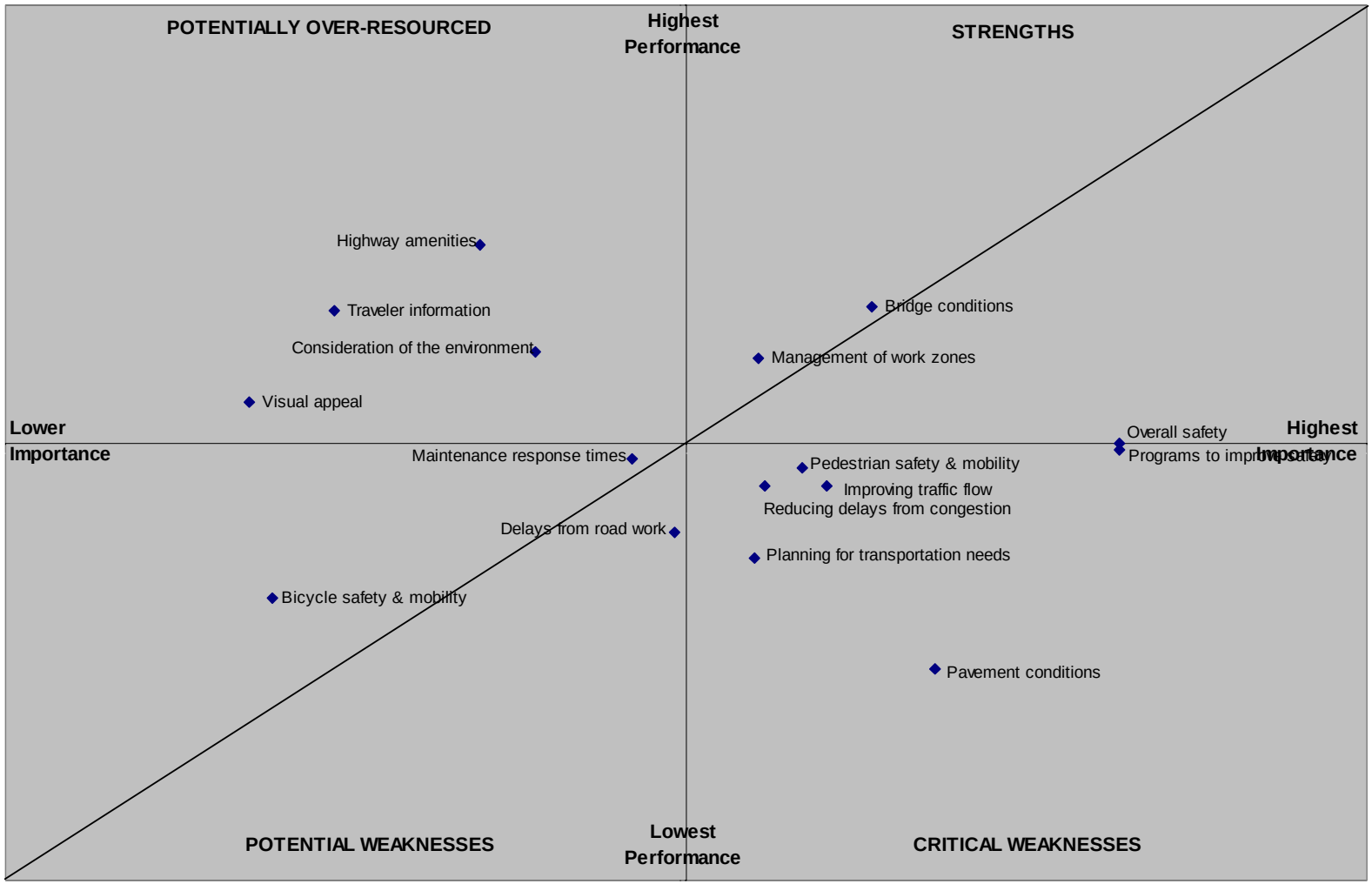
	Commuters	Non-Commuters
Overall Grade	2.53 (B-)	2.41 (C+)

Explanation of quadrants

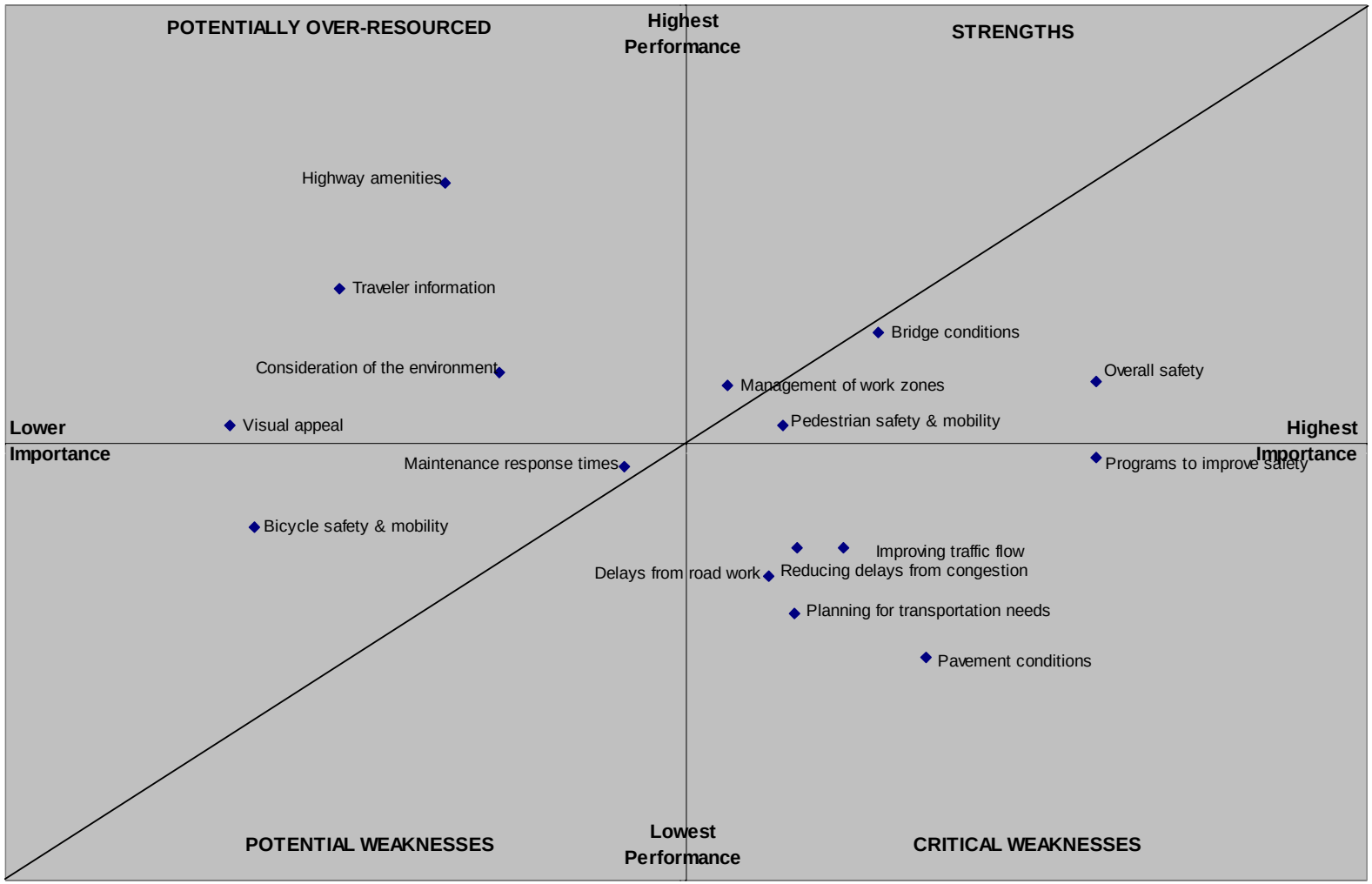
- Combined importance and quality
  - Maintain / leverage strengths
  - Address / place resources toward weaknesses / potential weaknesses

		Importance: Low	Importance: High
Performance	High	**Priority 4:** *Limit Efforts / May be Over-resourced*	**Priority 1:** *Strengths: Maintain Resources / Leverage*
	Low	**Priority 3:** *Potential Weaknesses: Improve if Resources are Available*	**Priority 2:** *Critical Weaknesses: Target Improvement Efforts Here*

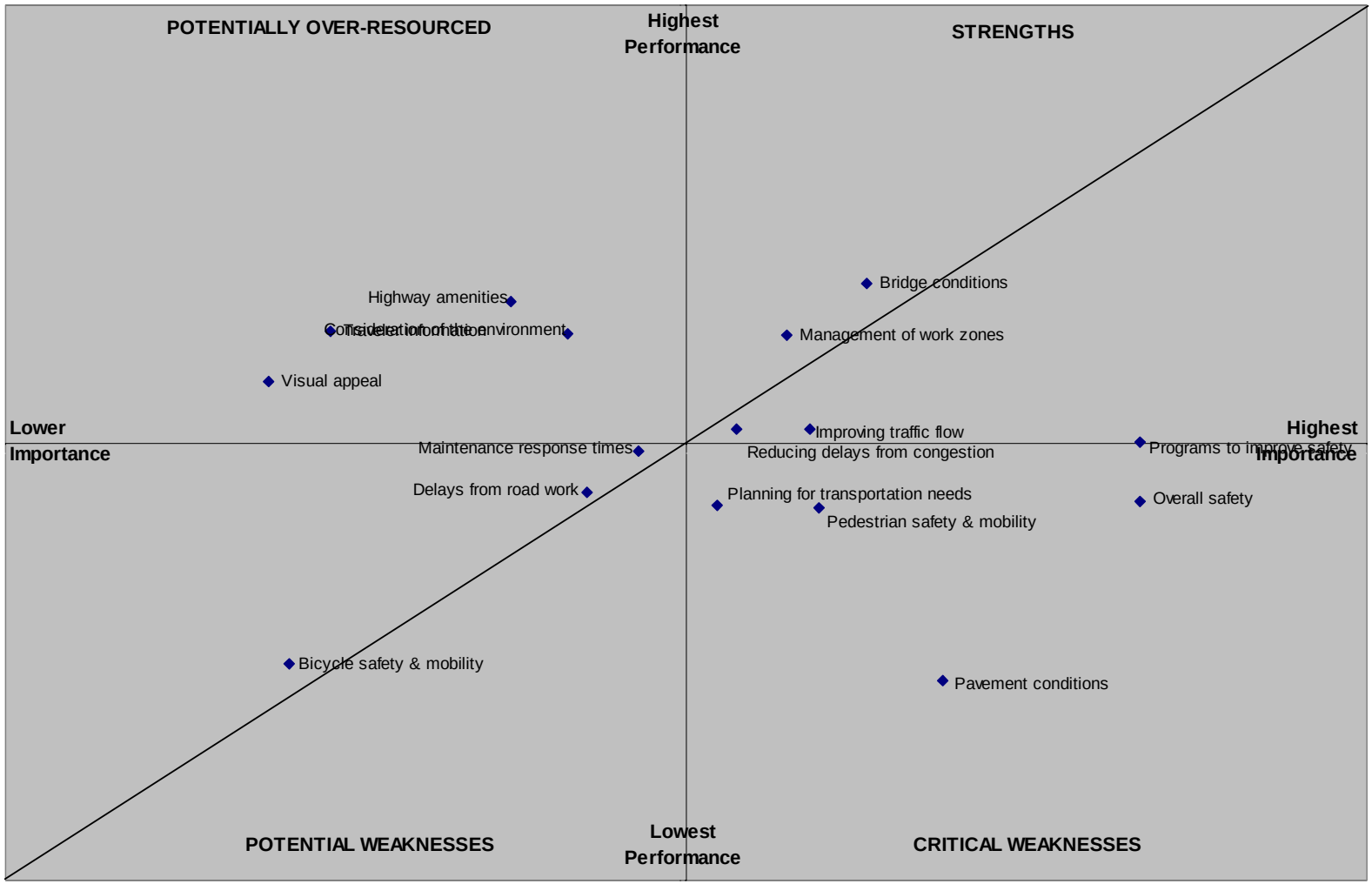
Target Improvement Areas -- Statewide



Target Improvement Areas – Southeast MI



Target Improvement Areas – Rest of State



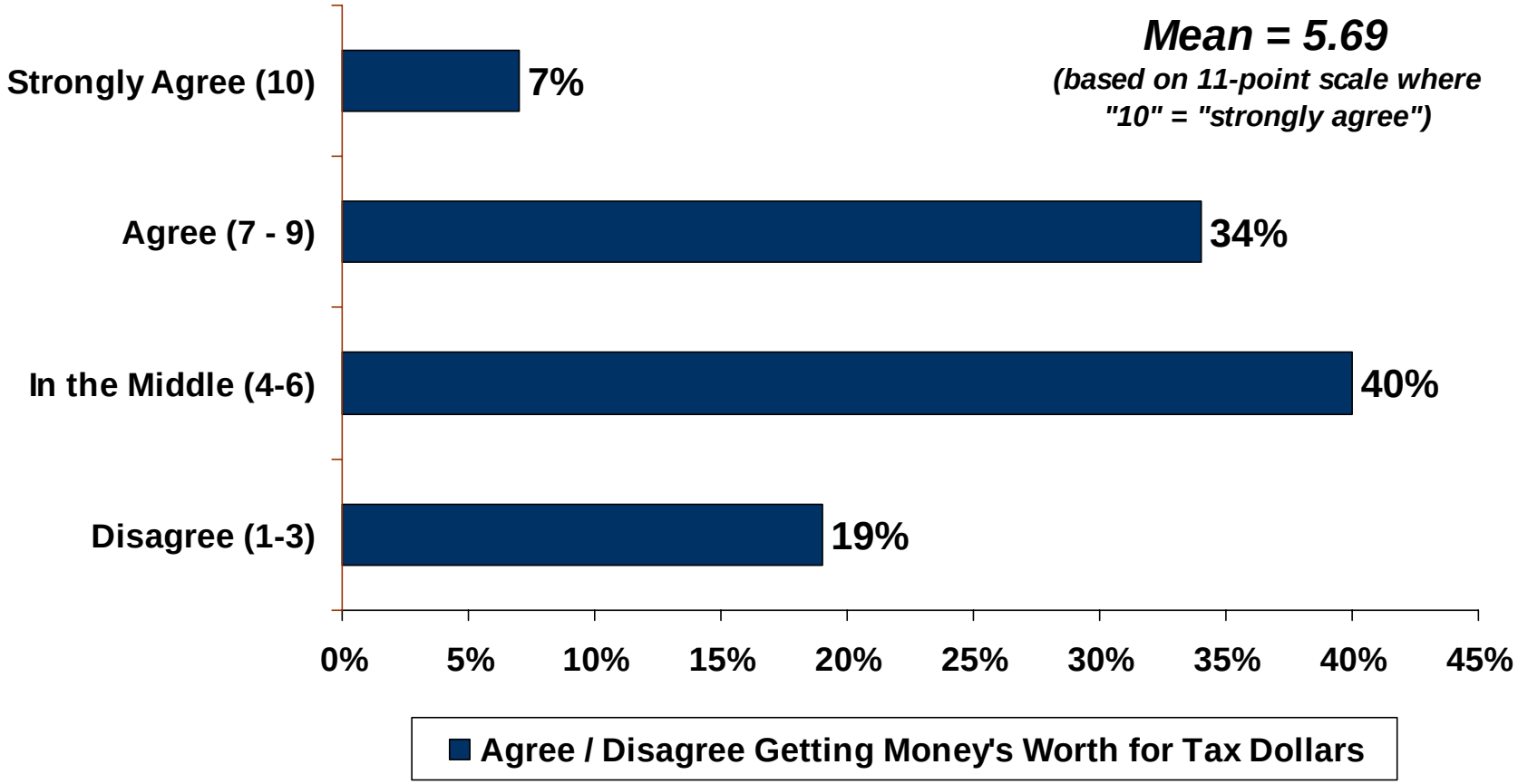
Support for Projects

- Michigan travelers are supportive of all projects but notably those that support the use of alternative modes.

	Build / Expand Pedestrian Walkways	Build / Expand Public Transportation	Build / Expand Bike Lanes	Build More Roads
% Extremely Likely	26%	24%	23%	18%
% Likely	42	39	41	45
% In the Middle	21	28	25	26
% Not Likely	11	10	11	12
Mean *	7.16 (CD)	7.04 (D)	6.95 (A)	6.77 (AB)
Mean based on 11-point scale where "10" = "extremely likely to support."				

Value for Tax Dollars

- Michigan travelers have strongly mixed views as to whether they are getting value for the tax dollars spent to build or maintain the transportation infrastructure.



Key Findings: Michigan Specific Topics

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Pavement Conditions -- Statewide

- Pavement conditions is one of Michigan's critical weaknesses. To improve the state's overall grade for pavement conditions, focus on:
  - The amount of surface defects

	% Very Satisfied	% Somewhat Satisfied	Mean *
Quietness of Ride	19%	47%	3.41
Surface Treatment to Improve Traction	17	48	3.39
Surface Appearance	15	48	3.27
Smoothness of Ride	**15**	**39**	**3.03**
Durability	**10**	**36**	**2.78**
Amount of Surface Defects	**9**	**24**	**2.40**
Mean based on 5-point scale where "5" = "very satisfied."			

Pavement Conditions – Southeast MI

- Number of surface defects is an issue statewide. But in Southeast Michigan, the focus should also be on:
  - Durability
  - Surface appearance

	Southeast Michigan	Remainder of State	Differentiation
Number of Surface Defects	**2.25**	**2.53**	6
Durability	**2.56**	2.98	1
Surface Appearance	**3.13**	3.41	2
Smoothness of Ride	2.92	3.12	3
Surface Treatment	3.26	3.51	4
Quietness of Ride	3.32	3.49	5
Mean based on 5-point scale where "5" = "very satisfied."			

Bridge Conditions -- Statewide

- Bridge conditions is one of Michigan's strengths and conditions are aligned with traveler expectations. If additional resources are allocated here, focus on:
  - Safety
  - Smoothness of ride

	% Very Satisfied	% Somewhat Satisfied	Mean *
Safety of Bridges / Bridge Construction	33%	51%	3.96
Appearance	27	58	3.95
Smoothness of Ride	26	54	3.82
Durability	25	55	3.81
Lane & Shoulder Width	27	48	3.70
Availability of Bike Lanes / Walkways	17	35	3.00

Mean based on 5-point scale where "5" = "very satisfied."

Bridge Conditions – Southeast MI

- Safety and smoothness of ride are critical drivers statewide. But in Southeast Michigan, the focus should also be on:
  - Durability
  - Availability of bike lanes and pedestrian walkways

	Southeast Michigan	Remainder of State	Differentiation
Safety	**3.72**	**4.18**	1
Smoothness of Ride	**3.65**	**3.98**	5
Durability	**3.57**	4.03	2
Availability of Bike Lanes / Ped. Walkways	**2.91**	3.08	3
Appearance	3.78	4.10	4
Lane & Shoulder Width	3.57	3.83	6

Mean based on 5-point scale where "5" = "very satisfied."

Visual Appeal / Appearance -- Statewide

- Visual appeal of Michigan's highways exceeds expectations. But, if additional resources are allocated here, focus on:
  - Compatibility with natural environment
  - Litter / trash removal

	% Very Satisfied	% Somewhat Satisfied	Mean *
Design of rest areas	50%	44%	4.35
Landscaping	38	48	4.08
Compatibility with Natural Environment	35	50	4.03
Appearance of Sound Barriers / Walls	28	56	3.95
Regulations / Laws to Control Ads	21	50	3.54
Amount of Litter / Trash	26	38	3.37

Mean based on 5-point scale where "5" = "very satisfied."

Visual Appeal – Southeast MI

- In Southeast Michigan, landscaping is also a potential problem.

	Southeast Michigan	Remainder of State	Differentiation
Compatibility with Natural Environment	**3.88**	**4.18**	3
Trash / Litter Removal	**3.19**	3.53	2
Landscaping	**3.93**	4.23	1
Design of Rest Areas	4.27	4.43	4
Appearance of Sound Barriers / Walls	3.89	4.01	5
Regulations to Control Outdoor Ads	3.51	3.56	6

Mean based on 5-point scale where "5" = "very satisfied."

Maintenance Response Times-- Statewide

- Maintenance response times is relatively close to traveler requirements. But, if additional resources are allocated here, focus on:
  - Pavement repairs
  - Litter and trash removal

	% Very Satisfied	% Somewhat Satisfied	Mean *
Guardrail / Barrier Repairs	41%	48%	4.16
Rest Area Cleaning	41	47	4.15
Crashes / Debris Cleared Quickly	37	46	3.99
Repainting Pavement Markings	31	48	3.82
Snow Removal	35	42	3.75
Litter / Trash Removal	31	41	3.66
Pavement Repairs	13	40	3.02

Mean based on 5-point scale where "5" = "very satisfied."

Maintenance Response– Southeast MI

- In Southeast Michigan, removal of crashes and debris may also be a problem.

	Southeast Michigan	Remainder of State	Differentiation
Pavement Repairs	**2.86**	**3.17**	5
Litter / Trash Removal	**3.43**	**3.88**	1
Crashes / Debris Removed Quickly	**3.78**	4.18	2
Snow Removal	3.71	3.79	3
Guardrails / Barriers Repair Time	4.03	4.28	4
Pavement Markings Repainted Regularly	3.80	3.84	6
Rest Area Cleaning	4.04	4.24	7

Mean based on 5-point scale where "5" = "very satisfied."

Congestion -- Statewide

- Congestion due to roadwork and construction is the most significant issue.

	% Very Satisfied	% Somewhat Satisfied	Mean *
Congestion Due to Accidents & Accident Clean-Up	26%	47%	3.64
Overall Level of Congestion	15	39	3.04
Congestion Due to Roadwork / Construction	11	40	2.91

Mean based on 5-point scale where "5" = "very satisfied."

Congestion – Southeast MI

- But in Southeast Michigan, the overall level of congestion is the greatest problem.

	Southeast Michigan	Remainder of State	Differentiation
General Level of Congestion	**2.48**	3.56	1
Congestion Due to Roadwork / Construction	**2.50**	**3.29**	2
Congestion Due to Accidents / Accident Clean-up	3.34	3.92	3

Mean based on 5-point scale where "5" = "very satisfied."

Traffic Flow / Congestion -- Statewide

- Traffic flow and congestion is a weakness statewide. To improve overall traveler satisfaction, focus on:
  - Traffic signal timing
  - Availability of park-and-ride lots
  - Helping travelers judge / predict travel times

	% Very Satisfied	% Somewhat Satisfied	Mean *
Ability to Judge / Predict Travel Times	36%	48%	4.01
Availability of Roadway Message Signs	34	51	3.99
Availability of Information about Delays	37	44	3.97
Availability of Park-and-Ride Lots	28	52	3.84
Traffic Signals on Entrance Ramps	32	46	3.82
Traffic Signal Timing	24	49	3.62
Availability of Public Transportation	21	40	3.25

Mean based on 5-point scale where "5" = "very satisfied."

Traffic Flow / Congestion

- In Southeast Michigan, the availability of public transportation and in the remainder of the state increased information about delays should be focuses.

	Southeast Michigan	Remainder of State	Differentiation
Ability to Judge / Predict Travel Times	**3.73**	**4.27**	1
Availability of Public Transportation	**2.89**	3.58	2
Availability of Information About Delays	4.05	**3.88**	3
Availability of Park-and-Ride Lots	3.58	4.07	4
Traffic Signals on Freeway Entrances	3.60	4.02	5
Traffic Signal Timing	3.50	3.74	6
Availability of Road Message Signs	3.87	4.10	7

Mean based on 5-point scale where "5" = "very satisfied."

Delays from Roadwork -- Statewide

- Delays from roadwork is a potential weakness statewide and a critical weakness in Southeast Michigan. To improve overall traveler satisfaction, focus on:
  - The amount of time required to make repairs and
  - The use of detours to re-route traffic

	% Very Satisfied	% Somewhat Satisfied	Mean *
Amount of Time to Clear Accidents	27%	56%	3.88
Making Repairs During Non-Rush Hours	35	44	3.87
Use of Detours to Re-Route Traffic	19	51	3.52
Amount of Time Required to Make Repairs	13	37	2.94

Mean based on 5-point scale where "5" = "very satisfied."

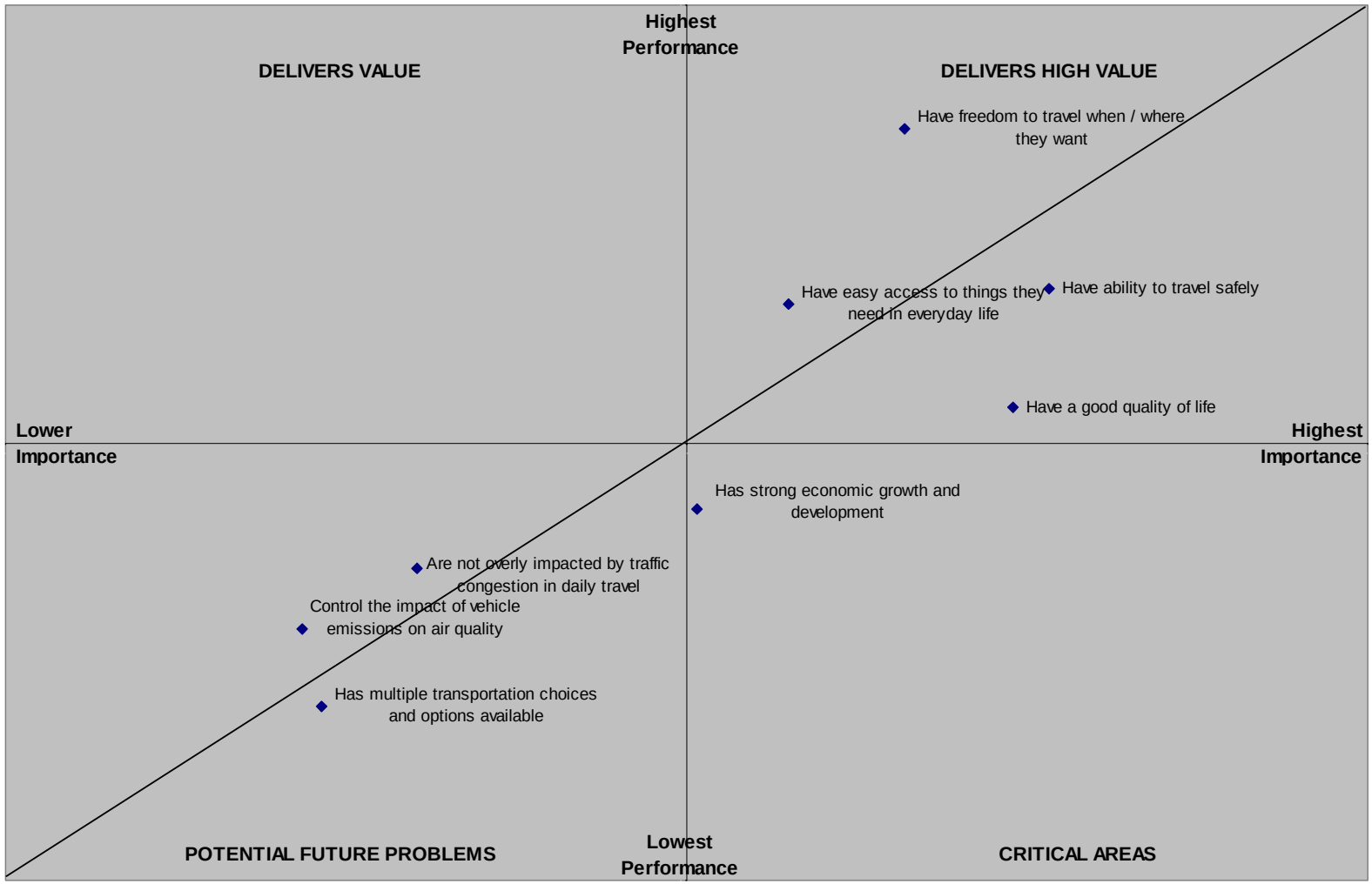
Important Benefits of a Good System

- Having the ability to travel safely is the most critical benefit a good transportation system can deliver. Also important:
  - Having a good quality of life
  - Having the freedom to travel when / where want
  - Having access to things people need / want in everyday life
  - Having strong economic development

Michigan's Delivery of Key Benefits

- Michigan's transportation system does best in delivering:
  - Freedom to travel when / where citizens want
- But is significantly less effective in terms of:
  - Providing multiple transportation options / choices

Key Value of Michigan's System



Suggested Improvements

	% Strongly Agree	% Somewhat Agree	Mean *
More construction at night	59%	29%	4.31
Improve existing public transportation services	41	43	4.05
Build / expand pedestrian walkways	40	38	3.91
Provide better quality traffic information	31	50	3.90
Expand existing highways	38	39	3.85
Build / expand bike lanes / paths	34	44	3.84

Mean based on 5-point scale where "5" = "very satisfied."

Suggested Improvement by Region

- Southeast Michigan
  - New public transportation services
  - More roadway construction done at night
  - Existing highways expanded
  - Build / expand carpool lanes
  - Expand park-and-ride lot system
  - Shorter wait times at traffic signals
  - Expand existing public transportation services
- Remainder of State
  - Have all vehicles undergo emission tests
  - Build / expand bicycle lanes / paths
  - Provide better quality traffic information

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Preliminary Conclusions

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Conclusions

- Maintain / leverage system strengths:
  - Bridge conditions
  - Management of work zones
- Use additional resources to further align safety with travelers' expectations
  - May need some additional research to understand what these expectations are
- Devote resources to:
  - Improving pavement conditions
  - Better planning for future transportation needs
  - Reducing delays from congestion / Improving traffic flow
  - Improving pedestrian mobility / safety

Conclusions (con't)

- Focus improvements in pavement conditions statewide on the number of surface defects
  - And in Southeast Michigan on durability and surface appearance
- Focus improvements in traffic flow / congestion statewide on better management of work zones to minimize the impact of road construction
  - Decrease the amount of time required to complete repairs
  - Do a better job of routing detours

Conclusions (con't)

- Other measures to minimize congestion and improve traffic flow should be targeted by area:
  - Southeast Michigan – Improve / expand public transportation system
  - Remainder of State – Increase access to information about traffic delays
- Message Michigan's strengths – Provides mobility by providing its residents with:
  - Freedom to travel when and where they want
  - Easy access to things they need / want in everyday life
  - Safe travel

Conclusions (con't)

- Make improvements in areas to deliver other key benefits, including
  - Providing additional transportation options
  - Minimizing the impact of emissions on air quality
  - Mitigating the effect of growth / congestion on traffic flow
- Keep up the good work
  - Clear that MDOT is aware of issues given its selection of questions
  - Focus on quality and improvement

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Next Steps

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Analysis / Report

- Banners / Basic Crosstabulations
  - Current
  - Other Key Breakdowns that would be useful???
- National / State Grouping Comparisons
  - Target Date Available – 5/1/2005
- Report
  - Final Draft Report – Target Date 3/29/2005
  - Final Summary Report – 5/20/2005